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MOLDED PLASTIC OUTLET BOXES WITH CONCEALED KNOCKOUTS

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FIG. 1

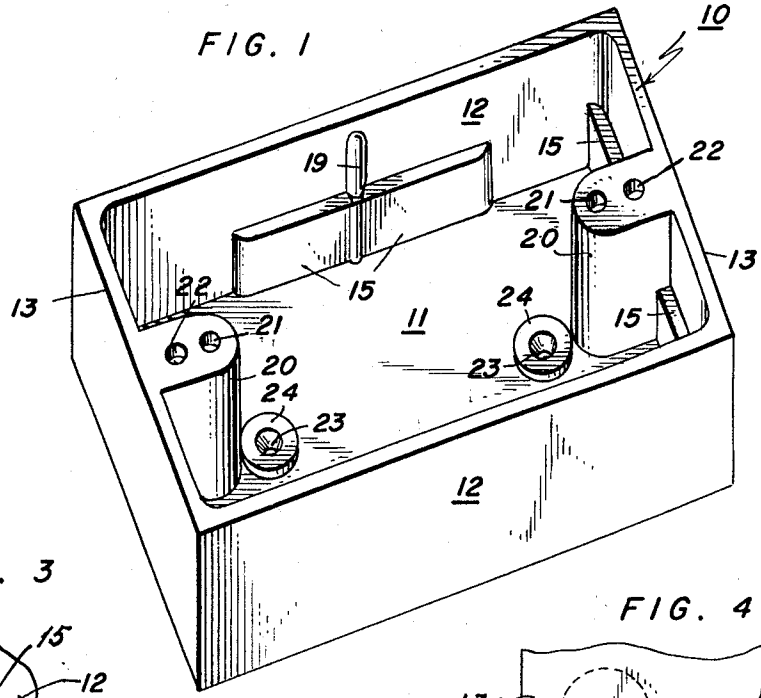


FIG. 3

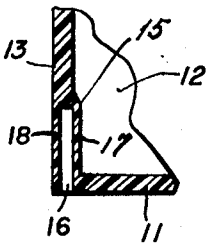


FIG. 4

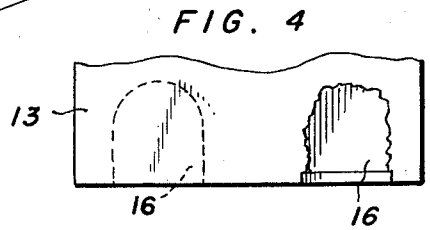
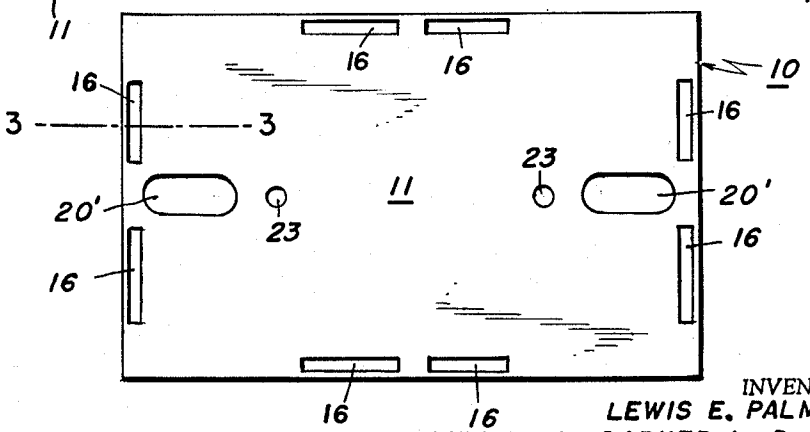


FIG. 2



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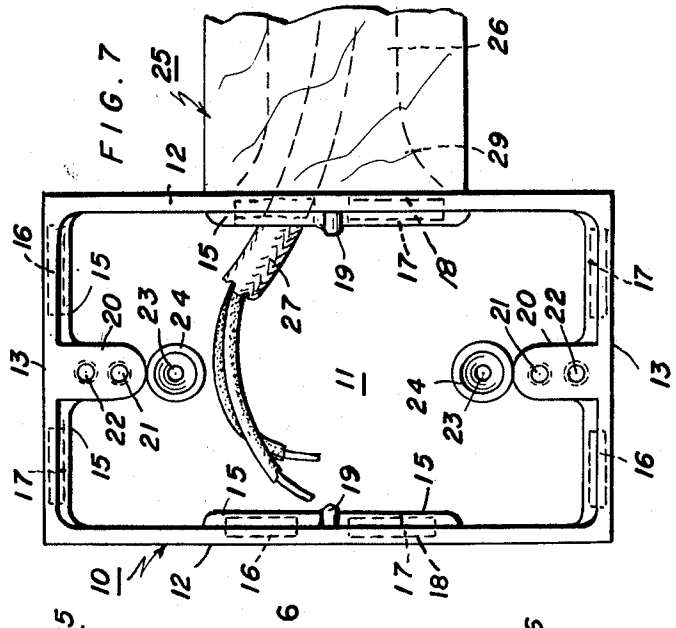

FIG. 7

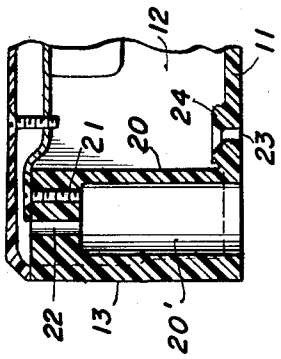

FIG. 8

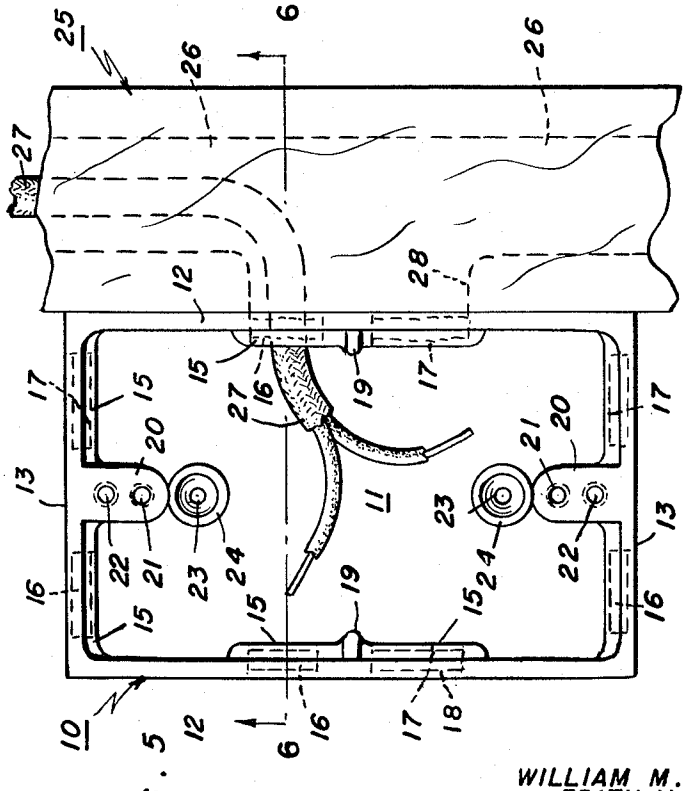

FIG. 5

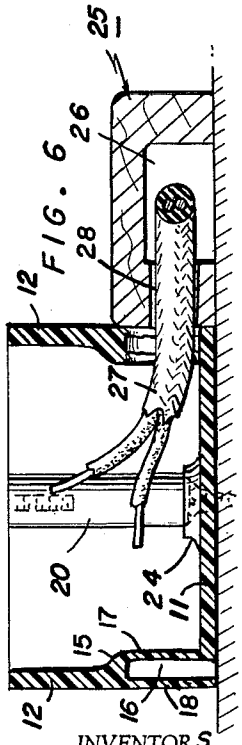

FIG. 6

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MOLDED PLASTIC OUTLET BOXES WITH CONCEALED KNOCKOUTS

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3 Claims. (Cl. 174—50)

This invention relates to electrical outlet and junction boxes molded of phenolic resin or similar insulating plastic materials, and more particularly to knockouts for such boxes. Boxes of this type for non-surface or concealed wiring are disclosed in the patents to W. M. Parker, No. 2,352,913, July 4, 1944, and W. M. Parker, Jr., No. 2,867,349, January 6, 1959.

In Hawaii and other places walls of residences and other buildings are frequently made of tongued and grooved wood boards of 1" thickness, or the wall construction is such that the usual wiring concealed within the wall is impractical. While the use of shallow surface-mounted outlet boxes with wiring mounted on the surface of a wall, is very old, that practice has disadvantages. In the past, where surface mounted switch boxes with knockouts have been used with trim strips to cover the wiring, it has been necessary to cut a wood shield with a hole in it to enclose the box and then mount the entire assembly adjacent to the trim strip. This, of course, is time consuming and does not give a pleasing appearance.

The present invention aims to provide a more satisfactory surface-mounted box for use with wiring on the wall surface and run in channels under wood trim strips such as door or window facings or moldings, baseboards or strips used to conceal the wires. Thus the boxes for switches or receptacles may be mounted wherever needed and will present a more attractive appearance as well as a safer and less expensive installation.

The principal object of the invention is to provide an insulated box of this character with a knockout adjacent the closed bottom of the box, the knockout being concealed from the outside of the box until the knockout is broken for use in running a non-metallic sheathed cable or conductor into the box, the location of the knockout being indicated by a slot-like opening in the bottom of the box.

Another object of the invention is to provide a molded plastic box of generally rectangular shape with concealed knockouts, so that, when the box has a side or an end associated with a channeled trim strip, the exposed portions of both the sides and ends of the box will present smooth unbroken surfaces.

Another object is to provide a box of this character with concealed knockouts adjacent the closed bottom of the box, which may be made directly in finished form by a simple molding and stripping operation in a standard compression molding press having molding members movable relative to each other in a straight line movement, thereby doing away with the need for complicated laterally movable die parts on the force punch.

With the above and other objects and advantages in view, the invention resides in the novel combinations and arrangements of parts and the novel features of construction hereinafter described and claimed, and illustrated in the accompanying drawings which show the present preferred embodiment of the invention.

In the drawings:

Fig. 1 is a perspective view of the improved box;

Fig. 2 is a bottom view of the box;

Fig. 3 is a detail section through one of the knockouts;

Fig. 4 is an elevation of the lower portion of one end of the box showing one of the knockouts removed;

Fig. 5 is a top or outer face view of the box with a trim strip or the like disposed along one of its sides and a cable in an opening formed by the removal of one of the knockouts;

Fig. 6 is a sectional view taken on the line **6—6** in Fig. 5;

Fig. 7 is a view similar to Fig. 5 showing another way in which a channeled wood strip may be associated with the box; and

Fig. 8 is a detail section through an end of the box showing how a cover plate may be mounted.

The box **10**, as shown, comprises a bottom **11** and a surrounding side wall with an open top adapted to be closed by a suitable cover plate. While the box body may be made in various sizes and shapes, the drawings show a rectangular box with two parallel side walls **12** and two parallel end walls **13**. The box is molded in one piece from a dielectric or thermosetting plastic material such as phenolic resin; and it is made in the standard compression molding press having die parts or members movable relative to each other in a straight line movement. The box shown, when made from Bakelite or similar phenolic resin, may have a length of about 4½", a width of about 2⅝" and a depth of about 1⅝". Both the bottom wall **11** and the surrounding side walls **12, 13** may be ⅛" thick. However where knockouts are to be formed, the side and end walls are made about twice as thick. These inwardly extending thickened portions or enlargements **15** are formed on the inner faces of the side wall. Thus the outer faces of these flat walls are smooth and unbroken as will be seen on reference to Fig. 1.

While any desired number of knockouts may be provided, in the disclosed box there are two on each of the side and end walls; and since the non-metallic sheathed cables used with these plastic boxes come in different sizes, a large and a small knockout is preferably formed in each wall. The knockouts are formed by molding recesses or chambers **16** which open through the bottom of the box, as seen in Figs. 3 and 6. These recesses are preferably formed partly in the thickened portions **15** and partly in the opposed smooth portions of the walls **12, 13**. The recesses produce outer and inner thin wall areas **17** and **18** which constitute the knockouts. The recesses **16** are of inverted U-shape in outline as seen in Fig. 4. The outer than area or knockout **17** is united to the wall around the edge of the recess and its location is indicated by the slot-like opening in the bottom of the box. The inner or rear thin area or knockout **18** is integrally united to the thickened portion **15** around the edge of the recess and to the bottom wall **11**. These thin areas may be readily broken by the use of a screw driver or other tool. The thickened portions or enlargements **15** are of substantially greater area than the size of the knockouts, and when two of the knockouts are closely spaced, as on the side walls **12**, a single thickened portion is used and it extends from opposite sides of an upright side wall reenforcing rib **19** disposed midway of the side **12**. On the end walls **13** the thickened portions extend between the walls **12** and a centrally positioned upright rib or member **20**. The latter extends upwardly from the bottom **11** the full height of the box, and is of substantial size so that it not only strengthens the box but also provides means for the mounting of the switch or other element in the box. The major portion of each of these inwardly extending members **20** is made hollow to provide a re-

cess or chamber 20' which opens through the bottom of the box. In the flat and closed upper portions of the members 20 are formed two openings 21 and 22. The inner openings 21 are formed with screw threads to receive machine screws for the mounting of the strap on the switch. In Fig. 8 is shown a part of a switch body or other device with its strap fastened by a screw in the hole 21. Usually the cover plate also shown in Fig. 8, is fastened by a screw threaded in the strap but some devices require the plates to be mounted through holes that are outside of the strap mounting holes and the purpose of the outer holes 22 is to provide clearance for these plate mounting screws.

It will be seen that the structure of the box with its concealed knockouts is such that the box may be molded in finished form on a standard compression molding press since no laterally movable or retractable die parts are necessary on the force punch which shapes the interior of the box. At the same time the slot like openings in the bottom of the box indicate the location of the knockouts and facilitate the removal of the knockout to be used.

The box may be fastened to the wall surface by two wood screws positioned in openings 23 in the bottom 11. Surrounding these screw holes on the upper face of the bottom are circular thickened portions 24 with countersinks to receive the heads of the screws. In using the box either side or end of the box or any flat faced portion of the upright wall, may be associated with a wood strip 25 which has on its bottom a channel 26 for concealing and protecting an electric conductor or cable 27. As previously noted the strip 25 may be any trim such as a baseboard, a facing or molding at a door or window, etc. In Fig. 5 the trim strip 25 extends along one side of the box and has in its bottom on one side a cutaway portion or notch 28 which opens into the channel 26 so that the cable may pass through one of the knockout openings. In Fig. 7 the trim strip is abutted endwise to the box and the channel 26 has its end widened, as at 29, to cover both of the adjoining knockouts. As seen in Fig. 6 the thickness of the trim 25 is greater than the height of the knockouts.

From the foregoing, taken in connection with the accompanying drawing, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention, and while preferences have been disclosed, attention is invited to the possibility of making variations within the scope of the invention as claimed.

What is claimed is:

1. An outlet box of molded plastic insulating material and having a bottom wall and a surrounding side wall with at least one concealed knockout therein adjacent the bottom of the box, said box being made directly in finished form by a simple molding and stripping operation in a standard compression molding press having molding members movable relative to each other in a straight line movement; said box comprising a bottom wall and a surrounding side wall with at least a portion of its outer face smooth and unbroken, a knockout forming chamber having a closed top and an open bottom molded in said box and disposed at least partially in said side wall adjacent the bottom wall and opposite said smooth outer face portion, said chamber forming two opposed thin breakable wall areas which constitute said concealed knockout, and having its open bottom in the plane of the outer surface of said bottom wall.

2. An outlet box of molded plastic insulating material and having a bottom wall and a surrounding side wall with at least one concealed knockout therein adjacent the bottom of the box, at least a portion of said side wall having a smooth unbroken outer face, an inwardly extending enlargement formed on the inner face of said side wall opposite said smooth portion of its outer face, said enlargement being integral with said bottom wall and extending upwardly therefrom, said box having a chamber which opens through its bottom and which is disposed partly in said enlargement and partly in the opposed portion of said side wall to provide two opposed thin breakable wall areas which constitute said concealed knockout.

3. The outlet box of claim 2 in which said box is of substantially rectangular shape and has two of said knockouts formed in each of its end walls, the outer faces of which form said smooth outer face portions, an inwardly extending upright rib formed at the center of the inner face of each end wall and integral with the two enlargements, said ribs having their lower ends integral with said bottom wall and their upper ends terminating substantially in the plane of the upper open top of the box, said upper ends of the ribs being flat to support a switch strap or the like and formed with screw threaded openings to receive fastening screws therefor.

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